United Nations ECE/TRANS/WP.29/GRSP/2015/12

Economic and Social Council

Distr.: General
27 February 2015

Original: English

Economic Commission for Europe

Inland Transport Committee

World Forum for Harmonization of Vehicle Regulations

Working Party on Passive Safety

Fifty-seventh session
Geneva, 18-22 May 2015
Item 15 of the provisional agenda
Proposal for a new Regulation on Frontal Impact

Draft new 01 series of amendments to the draft new Regulation on uniform provisions for the approval of passenger cars in the event of a frontal collision with focus on the restraint system

Submitted by the expert from France as Chair of the Informal Working Group on Frontal Impact *

The text reproduced below was prepared by the experts from the Informal Working Group on Frontal Impact (IWG FI) as an outcome of discussions of the Working Party on Passive Safety (GRSP) at its fifty-sixth session (ECE/TRANS/WP29/GRSP/56, para. 37). The aims is developing a separate new UN Regulation on frontal impact focusing on requirements for restraint systems. The proposal establishes a new series of amendments to the draft UN Regulation introducing a Thorax Compression Criterion (ThCC) of 34 mm. It is based on an informal document GRSP-56-23-Rev.2 distributed at that session. The modifications to the current text of ECE/TRANS/WP.29/GRSP/2014/10 are marked in bold for new or strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2012–2016 (ECE/TRANS/224, para. 94 and ECE/TRANS/2012/12, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

GE.15-04075 (E)

1504075

Please recycle

I. Proposal

Paragraph 4.2., amend to read:

"4.2. An approval number shall be assigned to each type approved. Its first two digits (at present **01** corresponding to the **01** series of amendments) shall indicate the series of amendments incorporating the most recent major technical amendments made to the Regulation at the time of issue of the approval. The same Contracting Party may not assign the same approval number to another vehicle type."

Paragraph 5.2.1.2.3., amend to read:

"5.2.1.2.3. The thorax compression criterion (ThCC) shall not exceed **34** mm. [1]

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[1] **This threshold limit is derived from the injury criteria of a 65-year old 5th percentile female. This criterion should be limited to the front outboard passenger position under the load case and the test condition of this Regulation. Its usage should only be extended following further consideration and review."**

Insert new paragraphs 11. to 11.4., to read:

"11. Transitional provisions

11.1. As from the official date of entry into force of the 01 series of amendments to this Regulation, no Contracting Party applying this Regulation shall refuse to grant or refuse to accept type approvals to this Regulation as amended by the 01 series of amendments.

11.2. Even after the date of entry into force of the 01 series of amendments, Contracting Parties applying this Regulation may continue granting type approvals, and shall not refuse to grant extensions of type approvals, to this Regulation in its original form.

11.3. As from 1 September 2020, Contracting Parties applying this Regulation shall not be obliged to accept type approvals to the original form of this Regulation, as issued on 1 September 2020.

11.4. After 1 September 2020, Contracting Parties applying this Regulation shall continue to accept approvals of vehicle types to this Regulation in its original form, which were granted before 1 September 2020."

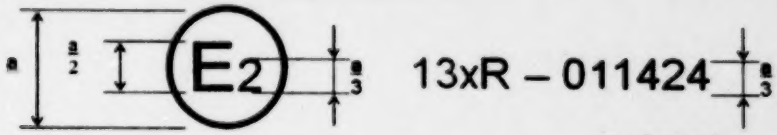
Annex 2, amend to read:

"**Annex 2**

Arrangements of approval marks

Model A

(See paragraph 4.4. of this Regulation.)

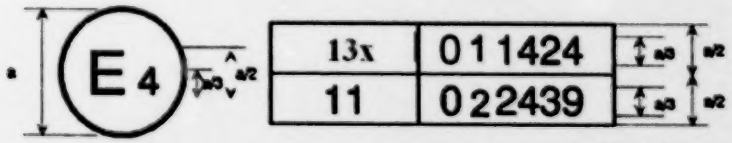


a = 8 mm min.

The above approval mark affixed to a vehicle shows that the vehicle type concerned has, with regard to the protection of the occupants in the event of a frontal collision, been approved in ~~the Netherlands (E 4)~~ **France (E2)** pursuant to Regulation No. ~~[~~13X~~]~~ under approval number ~~021424~~ **001424**. The approval number indicates that the approval was granted in accordance with the requirements of Regulation No. ~~[~~13X~~]~~ ~~as amended by the~~ 0~~2~~**1** series of amendments.

Model B

(See paragraph 4.5. of this Regulation.)



a = 8 mm min.

The above approval mark affixed to a vehicle shows that the vehicle type concerned has been approved in the Netherlands (E 4) pursuant to Regulations Nos. [13X] and 11.[1] The first two digits of the approval numbers indicate that, at the dates when the respective approvals were granted, Regulation No. [13X] incorporated the ~~02~~ **01** series of amendments and Regulation No. 11 incorporated the 02 series of amendments."

II. Justification

1. The purpose of this proposal is to introduce the 01 series of amendments to UN[13X] to enable Contracting Parties applying this Regulation to implement the Full Width Rigid Barrier test with ThCC of 34 mm for the Hybrid III fifth percentile female dummy on the passenger seat.

[1] The latter number is given only as an example.

2. Currently, it is agreed that the vehicle shall be tested and approved in accordance with the method described in Annex 3, using the Hybrid III fifth percentile female dummy on the passenger seat. There are, however, two proposals for ThCC: 34 mm and 42 mm. The final criterion has yet to be resolved.

3. In the light of technical difficulties at present, ThCC of 42 mm is a milestone toward attaining ThCC of 34 mm. This is why the proposed two-step approach should be recommended, as it would encourage Contracting Parties to attain ThCC of 34 mm, and also both the 00 series and 01 series shall be adopted at the same time.

United Nations ECE/TRANS/WP.29/GRSP/2015/13

Economic and Social Council

Distr.: General
27 February 2015

Original: English

Economic Commission for Europe

Inland Transport Committee

World Forum for Harmonization of Vehicle Regulations

Working Party on Passive Safety

Fifty-seventh session
Geneva, 18-22 May 2015
Item 7 of the provisional agenda
Regulation No. 16 (Safety-belts)

Proposal for Supplement 6 to the 06 series of amendments to Regulation No. 16 (Safety-belts)

Submitted by the expert from the Netherlands *

The text reproduced below was prepared by the expert from the Netherlands aimed at clarifying the provisions for the approval of "general-use" safety-belts. The modifications to the current text of UN Regulation No. 16 are marked in bold for new or strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2012–2016 (ECE/TRANS/224, para. 94 and ECE/TRANS/2012/12, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

GE.15-04078 (E)

1504078

Please recycle

I. Proposal

Paragraph 7.7.1., amend to read:

"7.7.1. The belt assembly shall be mounted on a trolley equipped with the seat and the **general** anchorages **as** defined in Annex 6 to this Regulation. However, if the belt assembly is intended ... the maximum number of real anchorage points."

Annex 1B, item12, amend to read:

"12. Approval granted/refused/extended/withdrawn[2] for **fixation to the** general ~~use~~ **anchorage positions as defined in Annex 6 to this Regulation**/for use in a ~~particular~~ **specific** vehicle or in ~~particular~~ **specific** types of vehicles[2,4] "

II. Justification

1. The current proposal aims to clarify the term "**general use**"-safety-belt (Annex 1B, item 12).

2. The expert from the Netherlands had noted that the current understanding of "**general use**"-safety belt is misleading and suggests an allowance of installation that does not exist.

3. Type approved safety-belts of this kind, should be attached to the anchorage point according to the coordinates specified in Annex 6 of this Regulation; an installation outside these coordinates is not permitted.

4. The current proposal aims at providing clearer wording and a better correspondence between paragraph 7.7.1. and the Communication sheet/approval certificate.

United Nations ECE/TRANS/WP.29/GRSP/2015/14

Economic and Social Council

Distr.: General
2 March 2015

Original: English

Economic Commission for Europe

Inland Transport Committee

World Forum for Harmonization of Vehicle Regulations

Working Party on Passive Safety

Fifty-seventh session
Geneva, 18-22 May 2015
Item 8 of the provisional agenda
Regulation No. 17 (Strength of seats)

Proposal for Supplement 4 to the 08 series of amendments to Regulation No. 17 (Strength of seats)

Submitted by the expert from the Netherlands *

The text reproduced below was prepared by the expert from the Netherlands, allowing a more forward displacement of the restrained occupants in the fitment of new safety-belts equipped with load limiter devices. It is based on an informal document without symbol (GRSP 56-07), distributed during the fifty-sixth session of the Working Party on Passive Safety (GRSP). The modifications to the current text of the UN Regulation are marked in bold for new or strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2012–2016 (ECE/TRANS/224, para. 94 and ECE/TRANS/2012/12, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

GE.15-04108 (E)

1504108

Please recycle

I. Proposal

Paragraph 5.2.3., amend to read:

"5.2.3. The rear parts of seats, **including parts mounted on the seats,** situated **as well** in area 1, defined in paragraph 6.8.1.1. ~~below~~, **as area 2, as defined in paragraph 6.8.1.2.,** shall pass the energy dissipation test in accordance with the requirements of Annex 6 to this Regulation."

Paragraph 5.2.4., amend to read:

"5.2.4. The surface of the rear parts of seats shall exhibit no dangerous roughness or sharp edges likely to increase the risk of severity of injury to the occupants. This requirement is considered as satisfied if the surface of the rear parts of seats tested in the conditions specified in paragraph 6.1. below exhibit radii of curvature not less than:

2.5 mm in area 1 **and area 2**,
~~5.0 mm in area 2,~~
3.2 mm in area 3.

These areas are defined in paragraph 6.8.1. below."

Paragraph 5.5.2., amend to read:

"5.2.3.2. The requirements of paragraph ~~5.1.3.~~ **5.2.3.** shall not apply to rearmost seats, to back-to-back seats or to seats that comply with the provisions of Regulation No. 21 "Uniform Provisions concerning the Approval of Vehicles with regard to their Interior Fittings" (E/ECE/324-E/ECE/TRANS/505/Rev.1/Add.20/Rev.2, as last amended)."

Paragraph 5.5.2., amend to read:

"5.5.2. Parts of the front ~~and rear faces~~ of the head restraints situated in area 1, as defined in paragraph 6.8.1.1.3. ~~below~~ shall pass the energy absorption test. **The rear of the head restraints situated as well in area 1, as defined in paragraph 6.8.1.1., as area 2, as defined in paragraph 6.8.1.2., shall pass the energy absorption test.**"

Paragraph 5.5.5., shall be deleted

II. Justification

1. According to recent vehicle safety developments (i.e. Euro New Car Assessment Program) to improve restraint systems, load limiters devices fitted on safety-belts allow forward displacements of occupants at significantly lower threshold values.

2. Thus far, the provisions of UN Regulation No. 16 (para. 6.4.1.4.1.) cannot be changed to allow a closer contact of the test dummy with the steering assembly, provided that this contact fulfils certain energy absorption test requirements and does not occur at a speed higher than 24 km/h.

3. For safety-belts of seating positions other than front facing, the above requirements have yet to be provided. This proposal provides the provisions on all seating positions.

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* *Note by the secretariat*: the text need further clarification.

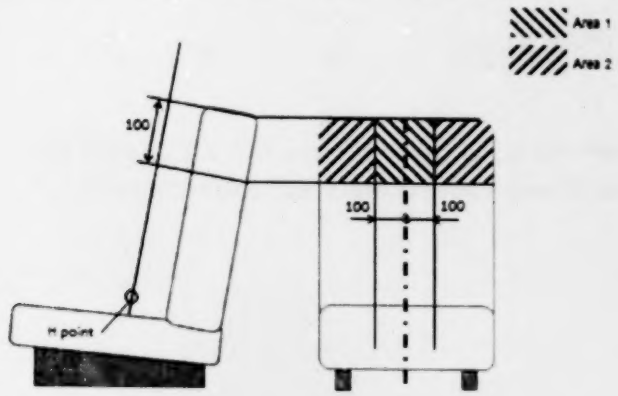
4. To cope with a wider forward displacement of the occupants, UN Regulation No. 17 should provide requirements concerning good energy absorption criteria for those areas of seat backs where the head of the rear occupant is to be impacted.

5. So far **only** Area 1 of impact, of the back seat is subject to energy absorption criteria. However, if Regulation No.16 allowed a broader forward displacement and therefore more possibilities of contact with rigid parts in front of the test dummy, then it would be necessary to also involve Area 2 of impact.

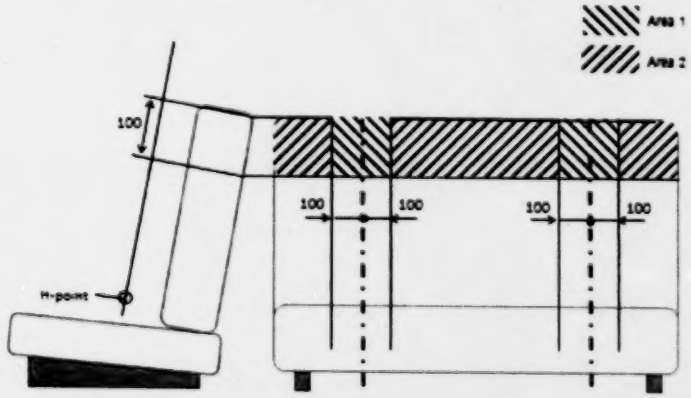
6. Area 1 is rather small to be tested. Figures of Area 1 and Area 2 for different seat configurations are indicated below to give a clearer view of the scope of the current proposal.

7. The proposed amendment to paragraph 5.2.3.2. is an editorial correction.

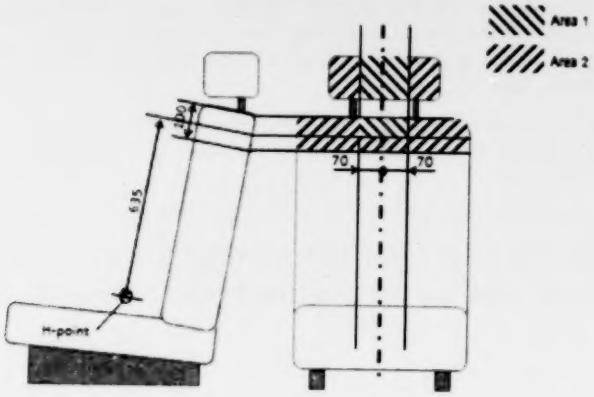
Reg.17, par. 6.8.1.1.1.(Area 1) + par. 6.8.1.2.1.(Area 2): In the case of separate seats without head restraints



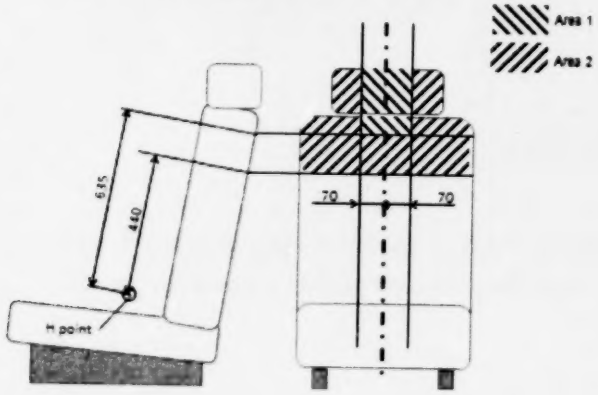
Reg.17, par. 6.8.1.1.2. (Area 1) + par. 6.8.1.2.1. (Area 2): In the case of bench seats without head restraints



Reg.17, par. 6.8.1.1.3. (Area 1) + par. 6.8.1.2.1. (Area 2):
In the case of seats with head restraints



Reg.17, par. 6.8.1.1.3.(Area 1) + par. 6.8.1.2.2.(Area 2):
In the case of seats with integrated head restraints



Source of seat drawings: tass international (*tno automotive safety solutions*) - Helmond

United Nations ECE/TRANS/WP.29/GRSP/2015/15

Economic and Social Council

Distr.: General
2 March 2015

English only

Economic Commission for Europe

Inland Transport Committee

World Forum for Harmonization of Vehicle Regulations

Working Party on Passive Safety

Fifty-seventh session
Geneva, 18-22 May 2015
Item 7 of the provisional agenda
Regulation No. 16 (Safety-belts)

Proposal for Supplement 6 to the 06 series of amendments to Regulation No. 16 (Safety-belts)

Submitted by the expert from the European Association of Automotive Suppliers *

The text reproduced below was produced by the expert from European Association of Automotive Suppliers (CLEPA) to clarify the installation of different light colours on the buckle and to improve its visibility in dark conditions for the wearer, and even perhaps to rescue occupants. The modification to the current text of the UN Regulation No. 16, are marked in bold for new characters.

* In accordance with the programme of work of the Inland Transport Committee for 2012–2016 (ECE/TRANS/224, para. 94 and ECE/TRANS/2012/12, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

GE.15-04126 (E)

1504126

Please recycle

I. Proposal

Paragraph 6.2.2.2., amend to read:

"6.2.2.2. ....The buckle release area shall be coloured red. No other part of the buckle shall be of this color. When the seat is occupied, red warning light in any part of the buckle is permitted if it is switched off after the occupant has buckled. **Light on the buckle at a colour other than red may not be switched off after the occupant has buckled.**"

II. Justification

The current proposal aims at allowing the installation of different light colours on the buckle to improve its visibility in dark conditions for the wearer and even to rescue occupants. Moreover, it addresses an alignment of ambient light design or strategies in modern cars with a functional element of an occupant protection device to support its visual exposition in the vehicle compartment. It aims to better showing the location and appearance of the orientation of seat belt buckles.

United Nations ECE/TRANS/WP.29/GRSP/2015/16

Economic and Social Council

Distr.: General
20 March 2015

English only

Economic Commission for Europe

Inland Transport Committee

World Forum for Harmonization of Vehicle Regulations

Working Party on Passive Safety

Fifty-seventh session
Geneva, 18-22 May 2015
Item 7 of the provisional agenda
Regulation No. 16 (Safety-belts)

Proposal for Supplement 6 to the 06 series of amendments to Regulation No. 16 (Safety-belts)

Submitted by the expert from the European Association of Automotive Suppliers *

The text reproduced below was prepared by the expert from the European Association of Automotive Suppliers (CLEPA) aimed at clarifying the provisions for dynamic testing of rear seat system, advanced restraint system approval and transitional provisions. It supersedes ECE/TRANS/WP.29/GRSP/2015/4. The modifications to the current text of UN Regulation No. 16 are marked in bold for new or strikethrough for deleted characters.

* In accordance with the programme of work of the Inland Transport Committee for 2012–2016 (ECE/TRANS/224, para. 94 and ECE/TRANS/2012/12, programme activity 02.4), the World Forum will develop, harmonize and update Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

GE.15-05989 (E)

1505989

Please recycle

I. Proposal

Content, insert new Annex 19, to read:

"...

Annex 18 Safety-belt reminder tests.....112

Annex 19 Rear seats restraint system setup for dynamic test....."

Paragraph 2.8., amend to read:

"2.8. *"Airbag assembly"* means a device ... of the passenger compartment. **Any as such described deployed structure shall not be considered as rigid part."**

Paragraph 6.4.1.3.3., amend to read:

"6.4.1.3.3. In the case of a safety-belt intended to be used in ~~an outboard front~~ **a** seating position protected by an airbag ..."

Paragraph 6.4.1.4.1., amend to read:

"6.4.1.4.1. The movement of the chest reference ... in the dynamic test would have come into contact with any forward rigid part of the vehicle other than: ~~the chest with the steering assembly, if the latter meets the requirements of Regulation No. 12 and provided contact does not occur at a speed higher than 24 km/h. For this assessment the seat shall be considered to be in the position specified in paragraph 7.7.1.5. below.~~"

Insert new paragraphs 6.4.1.4.1.1. and 6.4.1.4.1.2., to read:

"6.4.1.4.1.1. In the case of the driver, contact of the chest with the steering assembly would be allowed, if the latter meets the requirements of Regulation No. 12 and provided contact does not occur at a speed higher than 24 km/h. For the assessment of the requirements in paragraphs 6.4.1.4.1. and 6.4.1.4.1.1., the seat shall be considered to be in the positions specified in paragraph 7.7.1.5. below.

6.4.1.4.1.2. In case of any other occupant a contact of the head or of the chest with any rigid part of the vehicle in front of the dummy would be allowed, provided contact with vehicle interior does not occur at a speed higher than 24 km/h and no contact of the manikins head with its knees takes place.

For the assessment of the requirements in paragraphs 6.4.1.4.1. and 6.4.1.4.1.2. the seat of the tested manikin and, if applicable, the seat in front of the manikin shall be considered to be in the positions specified in paragraph 7.7.1.6. below."

Paragraph 7.7.1.5., amend to read:

"7.7.1.5. For the assessment of the requirements in paragraphs 6.4.1.4.1. **and 6.4.1.4.1.1.** the seat shall be regarded in its most forward driving or travelling position appropriate to the dimensions of the manikin."

Insert a new paragraph 7.7.1.6., to read:

"7.7.1.6. For the assessment of the requirements in paragraphs 6.4.1.4.1. and 6.4.1.4.1.2. the seat of an occupant in the front shall be in its most

forward driving or travelling position according to the dimensions of the manikin. The positions of the seats shall be stated in the report.

In case of the alternative, ISO conventional frontal impact test or body-in-white (BIW) test on the sled, mentioned in paragraph 7.7.1.1. above, the seat back angle of the tested seat shall be adjusted at 10°, measured with the 3-D H point machine following the "Procedure for Determining the "H" point and the actual torso angle for seating positions in motor vehicles" under Annex 15.

For any testing position of rear seated occupants, the position of the tested seat, shall be considered as positioned to the seats R-Point position and its seat back angle positioned to 10° if adjustable, derived from the 3-D H point machine.

The seat in front of a tested seat shall be adjusted to the most rearward and lowest position appropriate for any contact with the manikin installed on the rear seat, then shifted forward for minimal pelvis displacement according to paragraph 6.4.1.3.2. and with a seat back angle at 10°, as derived from the 3-D H Point machine (Annex 19, Figure 1).

This can be proven with a contour on CAD or drawing."

Paragraphs 7.7.1.6. and 7.7.1.7.(former), renumber as paragraphs 7.7.1.7. and 7.7.1.8.

Paragraph 7.10. amend to read:

"7.10. Test report

7.10.1. The test report shall record the results of all the tests in paragraph 7. above and in particular:

(a) …

…

(i) The data of the speed as a function of the displacement of the most forward point of the head and the chest reference point necessary for the judgment that no interior part will be in the zone where the speed is higher than 24 km/h. *

If by virtue …"

Insert new paragraph 8.1.6.1., to read :

"8.1.6.1. For the rear seat positions, if the restraint system has been tested according to the requirements of paragraph 6.4.1.4.1.2. without the vehicle environment as defined in paragraph 7.7.1., the installation conditions in the vehicle shall be verified for the compatibility with those defined in the Communication form for the approval of the restraint system.

Moreover, in that case, the contact of the upper part of the manikin with the interior of the passenger compartment is allowed if the energy absorption requirements defined in Regulation No. 21 or Regulation No. 17 are fulfilled."

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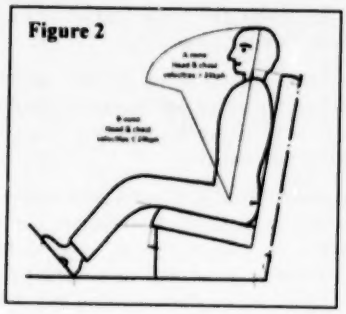
* *Note by the secretariat*: the text need further clarification.

Annex 1B, insert new item 12.1., to read :

"**12.1.** **In case a restraint system has been granted/refused/extended/withdrawn 2/ approval for general use, those can be used for all vehicles compatible with the following dimensional conditions: no interior part in a quoted A-zone as shown below (figure 2):** *

Figure 2



"

Annex 14, paragraph 2.2.3., amend to read:

"2.2.3. Results

Test results shall meet the requirements set out in paragraph 6.4.1.3.1. of this Regulation.
The forward displacement of the manikin may be controlled with regard to paragraph 6.4.1.3.2. of this Regulation (or 6.4.1.4. where applicable) during a test performed ~~with conditioning according to paragraph 1.6.1. of this annex~~ by means of a simplified adapted method.

A simplified, adapted method could be, e.g. the measurement of the speed at the chest reference point when its forward displacement is at 300 mm, without an airbag in front of it, during the conformity of production test."

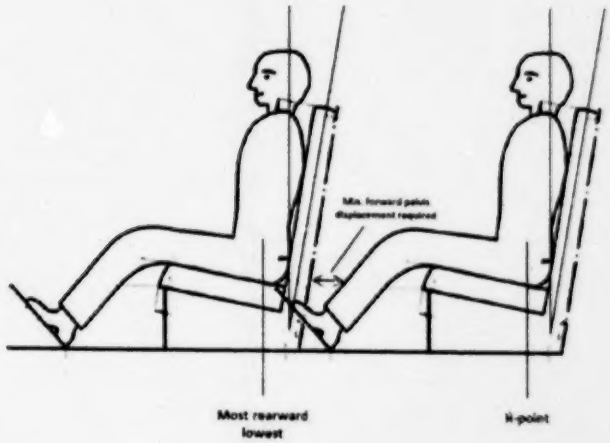
* *Note by the secretariat*: the text need further clarification.

Insert a new Annex 19, to read:

"Annex 19

Rear seats restraint system setup for dynamic test

Figure 1
Rear seats restraint system setup for dynamic test



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II. Justification

The proposed amendments to UN Regulation No. 16 are based on the following arguments:

1. Alignment of requirements for front and rear seated occupants;
2. Specify the setup of dynamic testing in case of belt assembly or restraint system;
3. Enable the installation of advanced restraint systems through a clear type approval process also for rear seated occupants;
4. Define a minimum technical standard for limiting manikin movement in the component type approval process and conformity of production process;
5. Indicate a simplified adapted method to provide a common understanding for all parties involved such as technical services or manufacturers;
6. Clarify the role of inflatable protective structures, without rigid parts, as part of the restraint system. Discussions to clarify this aspect were held with technical services;
7. Define the effect that a component type approval for restraints system might have on the vehicle type approval.